REMARKS

Claims 1, 4, 5 and 8-10 are now pending in this application. Claims 6 and 11-14 are withdrawn. Claims 2, 3 and 7 are cancelled herein. Claims 1, 4, 5, 8 and 10 are amended herein to clarify the invention. The amendment to claim 1 incorporates the limitations of claims 2, 3 and 7. In addition, the recitation has been amended to recite filtration at ordinary pressures and an air escape hole at the upper portion of the outer tube. These additional structural limitations are supported by the discussion in the specification on page 3 3rd full paragraph, and on page 7 3rd and 4th full paragraphs as well as Figs 1 and 2b.

Claim 8 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically, the Office Action avers that reciting Teflon, which is a registered trademark, in claim 8 does not necessarily refer to a particular product or material, because such product or material may be changed by the trademark owner at any time.

Claim 8 is amended herein to remove the recitation of the trademarked name Teflon. Teflon means tetrafluoroethylene, as evidenced by the definition provided

in Hawley' Condensed Chemical Dictionary. See Appendix I. Thus, the recitation of the trademarked name Teflon has been replaced by tetrafluoroethylene.

Claims 1 and 10 are rejected under 35 U.S.C. §102(b) as being anticipated by Koyama et al. (U.S. Pat. No. 4,690,754).

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

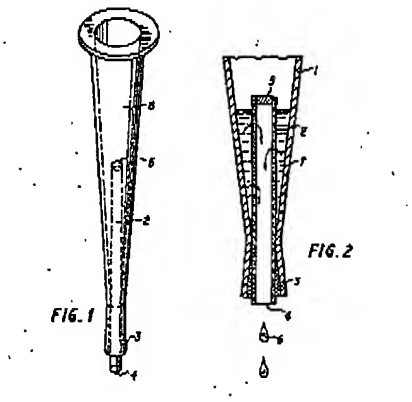
Applicants respectfully aver that the claims as amended are not anticipated by the cited references.

Claim 1 incorporates the structural limitations of claim 7 which was not rejected for being anticipated by Koyama. Thus, all the claims as amended include the structural limitation of claim 7 and overcome the anticipation rejection.

Furthermore, the apparatus described in Koyama is a filter for minute quantities of liquid, which operates under a centrifugal force or pressure, and has

an ultra-filtration membrane that removes macromolecular protein from a solution. *See* Koyama column 3 lines 21 to 25. Thus, water will pass through the ultra-filtration membrane disclosed in Koyama, and use of the apparatus described in Koyama will not allow for the separation of water and an organic solvent. In contrast, the claims as amended recite a water separation device that separates an organic solvent and water at normal pressures.

Moreover, the water separation device of the current application separates water and an organic solvent by way of natural dropping at normal pressures. In order to allow smooth natural dropping, the upper portion of the outer tube of the water separation apparatus of the invention has an air escape hole. By providing the air escape hole, even if the organic solvent enters the outer cylinder from the inner cylinder, a sealed state will not result, so that the organic solvent that is filtered under ordinary pressure flows out smoothly from the solvent discharge outlet. There is no disclosure or suggestion of such an air escape hole in the Koyama.



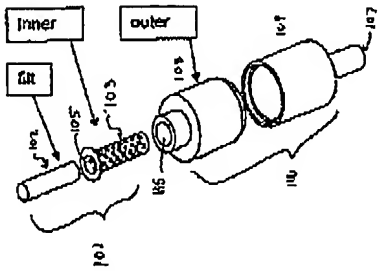
Furthermore, the membrane filter as recited in the claims is hydrophobic and insoluble in organic solvents. In contrast, the apparatus described in Koyama which is used as an ultra-filtration membrane that does not separate water and organic solvents is not.

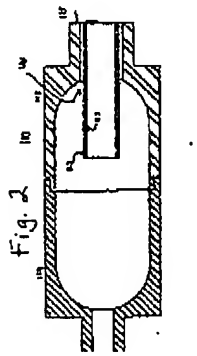
Claim 1, 4, 5 and 8-10 are rejected under 35 U.S.C. §102(e) as being anticipated by Hunicke-Smith (U.S. Pub. Pat. App.2002/0185429).

Hunicke-Smith discloses a filter apparatus that uses centrifugation. *See* Hunicke-Smith para. 12. If filtration is applied with centrifugal force or pressure

water will pass through the filter and it will not separate the water and the organic solvent. Accordingly, water cannot be separated from an organic solvent with the device disclosed in Hunicke-Smith.

Furthermore, as is evident from the figures of the filter disclosed in Hunicke-Smith,



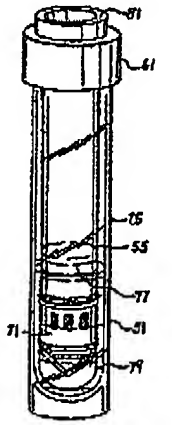


the filter in Hunicke-Smith is not provided with an air escape hole. In addition, Hunicke-Smith discloses the inner tube 103 as separate from the filter 102. In the current invention, the tubular member itself is formed into the filter with the water separation membrane being provided on the surface of the tubular member.

Claim 1, 4, 5 and 8-10 are rejected under 35 U.S.C. §102(a/e) as being anticipated by Diamond et al. (U.S. Pat. No. 6,295,333).

The apparatus disclosed in Diamond is for cellular precipitation and the filter used in Diamond is a semi-permeable membrane. *See* Diamond column 4 lines 5 to 9. Although with a semi-permeable membrane some of the solute does not pass through, the solvent does permeate, and therefore water permeates. Accordingly, separation of water and an organic solvent cannot be achieved with the apparatus disclosed in Diamond.

Furthermore, as is evident from the figures, the filter disclosed in Diamond



is not provided with an air escape hole. Moreover, there is no need for an air escape hole because the solution is not discharged to the exterior; what Diamond discloses is a precipitation cell in which, with a view to performing precipitation by placing a liquid in both the inner tube and the outer tube, the bottom of the outer tube is closed. Thus, there is no outlet for discharging organic solvents or the like in the lower portion of the outer tube, as recited in the claims.

In regard to all the cited references, none disclose a structural limitation such that "the upper end of the tubular member is formed to have a large diameter, and said tubular member is fitted in said outer tube and stopped at the upper end of the outer tube at said large diameter portion", as recited in claim 4. Such structure prevents evaporation of the organic solvent in the current invention. However, the cited references are not intended to separate volatile solvents such as organic solvents.

In light of all the enumerated differences between the apparatus recited in the claims and the cited references, Applicant respectfully avers that the claims are not anticipated. Accordingly, the cited references do not disclose a device for separating water and an organic solvent at ordinary pressures as recited in the amended claims.

No fee is believed due. If there is any fee due the USPTO is hereby authorized to charge such fee to Deposit Account No. 10-1250.

The application is now believed to be in proper form for allowance of all claims and notice to that effect is earnestly solicited.

Respectfully submitted,
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Enc. Appendix I- Definition from Hawley's Condensed Chemical Dictionary

APPENDIX I

DEFINITION FROM HAWLEY'S
CONDENSED CHEMICAL DICTIONARY

Hawley's

Condensed Chemical

Dictionary

THIRTEENTH EDITION

Revised by

Richard J. Lewis, Sr.

JOHN WILEY & SONS, INC.

New York • Chichester • Weinheim • Brisbane • Singapore • Toronto

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reactor fission products by solvent extraction followed by crystallization as ammonium pertechnetate, which is reduced with hydrogen. The metal is silver-gray in appearance, mp 2200C (4000F), d 11.5, slightly magnetic. Compounds of the types TcO_2, Tc_2O_7, NH_4TcO_4, etc. have been prepared. The pertechnetate ion has strong anticorrosive properties. Technetium and its alloys are superconductors and can be used to create high-strength magnetic fields at low temperature. Tc-99 (metastable) is the most widely used isotope in nuclear medicine.
Use: Metallurgical tracer, cryochemistry, corrosion resistance, nuclear medicine.

Technical Association of the Pulp and Paper Industry. (TAPPI). A professional group of scientists devoted to the interests of pulp and paper chemistry and technology. Founded in 1915, it has seven sections, each concerned with a specific phase of the industry. It also has 11 local sections that hold monthly meetings. The association publishes its own journal, as well as industry data sheets, bibliographies, technical monographs on subjects relating to the paper industry. It establishes standards of quality and testing procedures. The address is Technical Park, PO Box 105113, Atlanta, GA 30348.

"Tedlar" ***[Du Pont].*** TM for polyvinylfluoride film.

TEDP. Abbreviation for tetraethyl dithiopyrophosphate.
See sulfotepp.

"Tedur" ***[Mobay].*** TM for polysulfide polymers.
Available forms: Glass, mineral, and mineral/glass grades.
Use: Injection molding for high-temperature and performance electronic and automotive parts.

"Teflon" ***[Du Pont].*** TM for tetrafluoroethylene (TFE) fluorocarbon polymers available as molding and extrusion powders, aqueous dispersion, film, finishes, and multifilament yarn or fiber. The name also applies to fluorinated ethylene-propylene (FEP) resins available in the same forms. The nostick cookware finishes may be of either type. Fibers are monofilaments made from copolymer of TFE and FEP.
Use: Packing, bearings, filters, electrical insulation, high-temperature industrial plastics, cooking utensils, plumbing sealants, coating glass fiber for architectural structure composites, bonding industrial diamonds to metal in the manufacture of grinding wheels.
See fluorocarbon polymer.

TEG. Abbreviation for tetraethylene glycol and triethylene glycol.

"Tego" ***[Rohm & Haas].*** TM for thin tissue impregnated with heat-convertible phenol-formaldehyde resin, supplied in rolls. Produces waterproof bond with plywood veneers.
Use: Hot-press bonding of furniture veneers, premium wall paneling.

TEL. Abbreviation for tetraethyl lead.

telluric acid. (hydrogen tellurate).
CAS: 7803-68-1. $H_2TeO_4 \cdot 2H_2O$ or H_6TeO_6.
Properties: White, heavy crystals. D 3.07, mp 136C. Soluble in hot water and alkalies; slightly soluble in cold water.
Derivation: Action of sulfuric acid on barium tellurate.
Hazard: As for tellurium.
Use: Chemical reagent.

telluric bromide. See tellurium tetrabromide.

tellurium.
CAS: 13494-80-9. Te. A nonmetallic element with many properties similar to selenium and sulfur. Atomic number 52, group VIA of the periodic table, aw 127.60, valences of 2, 4, 6; eight stable isotopes.
Properties: Silvery-white, lustrous solid with metal characteristics. D 6.24 g/cc (30C), Mohs hardness 2.3, mp 450C, bp 990C. Soluble in sulfuric acid, nitric acid, potassium hydroxide, and potassium cyanide solutions; insoluble in water. Imparts garlic-like odor to breath; can be depilatory. It is a p-type semiconductor and its conductivity is sensitive to light exposure.
Source: From anode slime produced in electrolytic refining of copper and lead.
Derivation: Reduction of telluric oxide with sulfur dioxide; by dissolving the oxide in a caustic soda solution and plating out the metal.
Grade: Powder, sticks, slabs, and tablets, 99.5% pure, crystals up to 99.999% pure.
Hazard: (Metal and compounds as tellurium) Toxic by inhalation. TLV: 0.1 mg/m³ of air.
Use: Alloys (tellurium lead, stainless steel, iron castings), secondary rubber vulcanizing agent, manufacture of iron and stainless steel castings, coloring agent in glass and ceramics, thermoelectric devices, catalysts, with lithium in storage batteries for spacecraft.
For further information refer to the Selenium-Tellurium Development Association, 11 Broadway, New York, NY 10003.

tellurium bromide. See tellurium dibromide and tellurium tetrabromide.

tellurium chloride. See tellurium dichloride.

tellurium dibromide. (tellurium bromide; tellurous bromide). $TeBr_2$.
Properties: Blackish-green, crystalline mass or gray to black needles; very hygroscopic. Mp 210C, bp